Complete Summary

GUIDELINE TITLE

Lipids.

BIBLIOGRAPHIC SOURCE(S)

Singapore Ministry of Health. Lipids. Singapore: Singapore Ministry of Health; 2006 May. 59 p. [92 references]

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Singapore Ministry of Health. Lipids. Singapore: Singapore Ministry of Health; 2001 Jul. 52 p.

** REGULATORY ALERT **

FDA WARNING/REGULATORY ALERT

Note from the National Guideline Clearinghouse: This guideline references a drug(s) for which important revised regulatory information has been released.

- March 2, 2005, Crestor (rosuvastatin calcium): Revisions to the WARNINGS, DOSAGE AND ADMINISTRATION, CLINICAL PHARMACOLOGY, and PRECAUTIONS sections of the labeling.

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

- Dyslipidaemia
- Coronary heart disease

GUIDELINE CATEGORY

Diagnosis
Evaluation
Management
Prevention
Risk Assessment
Treatment

CLINICAL SPECIALTY

Cardiology
Endocrinology
Family Practice
Geriatrics
Internal Medicine
Nutrition
Obstetrics and Gynecology
Pediatrics

INTENDED USERS

Advanced Practice Nurses
Nurses
Physician Assistants
Physicians

GUIDELINE OBJECTIVE(S)

To assist physicians and other health care professionals in clinical decision making by providing well-balanced information on the management of patients with dyslipidaemia, without restricting the physician's individual clinical judgment

TARGET POPULATION

Patients at risk for or with dyslipidaemia

INTERVENTIONS AND PRACTICES CONSIDERED

Prevention

1. Population- and individually-based primary prevention strategies for prevention of coronary heart disease including community education of the public and identification of high risk patients
2. Secondary prevention strategies for individuals who already have coronary heart disease (CHD)

Diagnosis and Evaluation

1. Laboratory lipid measurements including total cholesterol (TC), low-density lipoprotein cholesterol (LDL-C), high-density lipoprotein cholesterol (HDL-C), and triglyceride (TG)
2. Assessment of risk based on laboratory measurements, presence of CHD, or other atherosclerotic disease, and identification of major risk factors including cigarette smoking, hypertension, LDL-C, family history of premature coronary heart disease, age, and Indian ethnicity

Treatment/Management

1. Lifestyle changes, including stopping smoking, weight reduction, exercise, and dietary changes
2. Drug therapy with statins, ezetimibe, fibrates, nicotinic acid, resins, omega 3 fish oil, or combination therapy, depending on the type of dyslipidemia
3. Monitoring of serum transaminase and creatine kinase levels
4. Referral to specialist, if indicated
5. Consideration of special populations (children; women, including pregnant women; elderly patients; and patients with diabetes mellitus, renal disease, or liver disease)

MAJOR OUTCOMES CONSIDERED

- Coronary heart disease (CHD)
- Cerebrovascular events
- Morbidity and mortality due to coronary heart disease
- Total cholesterol (TC), low-density lipoprotein cholesterol (LDL-C), high-density lipoprotein cholesterol (HDL-C), and triglyceride levels (TG)

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Not stated

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Levels of Evidence

Level Ia: Evidence obtained from meta-analysis of randomised controlled trials

Level Ib: Evidence obtained from at least one randomised controlled trial

Level IIa: Evidence obtained from at least one well-designed controlled study without randomisation

Level IIb: Evidence obtained from at least one other type of well-designed quasi-experimental study

Level III: Evidence obtained from well-designed non-experimental descriptive studies, such as comparative studies, correlation studies and case studies

Level IV: Evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

This review of the Ministry of Health (MOH) Clinical Practice Guidelines on Lipids, first published in 2001, is a timely update that incorporates the best available evidence from the scientific literature, appraised by the comprehensive expertise of the expert workgroup that revised the guidelines. They have interpreted the evidence in their local context and drafted practical recommendations on managing patients with lipid abnormalities.

The workgroup, comprising cardiologists, endocrinologists, lipid specialists, public health specialists, a neurologist and a family physician, was nominated by the

National Committee on Cardiac Care and appointed by MOH to develop these guidelines on lipids.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Grades of Recommendations

Grade A (evidence levels Ia, Ib): Requires at least one randomised controlled trial as part of the body of literature of overall good quality and consistency addressing the specific recommendation.

Grade B (evidence levels IIa, IIb, III): Requires availability of well conducted clinical studies but no randomised clinical trials on the topic of recommendation.

Grade C (evidence level IV): Requires evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities. Indicates absence of directly applicable clinical studies of good quality.

Grade GPP (good practice points): Recommended best practice based on the clinical experience of the guideline development group.

COST ANALYSIS

One of the factors influencing the choice of lipid modifying drugs is cost and cost-effectiveness. Recent studies have shown that statins and fibrates are cost effective when used for both secondary as well as primary prevention. Importantly, most of these studies had been done in the countries at a time when generic drugs were not available. Today, with the wide availability of generic drugs, statin and fibrate therapy have become even more cost-effective.

METHOD OF GUIDELINE VALIDATION

Not stated

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Not applicable

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

The recommendations that follow are those from the guideline's executive summary; detailed recommendations can be found in the original guideline document. Each recommendation is rated based on the level of the evidence and the classes of the recommendation. Definitions of the levels of the evidence (A, B, C, and Good Practice Point [GPP]) and classes of the recommendations (Level I through Level IV) are presented at the end of the "Major Recommendations" field.

Note from the National Guidelines Clearinghouse (NGC): These guidelines were updated by the developer in February 2006. Following are major changes or additions that have been made to the November 2001 version of the guidelines, followed by a summary of the guidelines. Please refer to the original guideline document for further details.

The following is a list of major changes or additions to the guidelines:

- The ranking of evidence and recommendations has been changed from a format from the American College of Cardiology/American Heart Association to the format based on the Scottish Intercollegiate Guidelines Network that has been adopted in all Ministry of Health Clinical Practice Guidelines.
- In Section 2 of the original guideline document, the epidemiology of lipids in Singapore has been updated based on data obtained from the 2004 National Health Survey.
- In Section 5 of the original guideline document, the classification of dyslipidaemia has been simplified.
- Section 8 of the original guideline document on risk assessment has been revised. Three risk categories, i.e., High Risk, Intermediate Risk and Low Risk groups, have been identified. The table of major risk factors for Coronary Heart Disease (CHD) has been updated. For individuals with $\geq$2 risk factors, estimation of the 10-year CHD risk is recommended using new risk score tables which have been recently developed.
- In Section 9 of the original guideline document on goal lipid levels, the Table on the goal levels of low density lipoprotein cholesterol (LDL-C), triglyceride (TG), and high density lipoprotein cholesterol (HDL-C) in the 3 risk category groups have been amended. Also in this section, an "optional goal" of LDL-C <2.1 mmol/L (80 mg/dL) in very high risk patients has been added.
- Annex 2A and 2B have been deleted.
- In Section 11 of the original guideline document on drug therapy, cost effectiveness issues of lipid therapy have been updated. Newly introduced drugs (e.g., rosuvastatin, ezetimibe and niaspan) have been added.

Laboratory Lipid Measurements

A lipid profile consisting of total cholesterol (TC), LDL-C, HDL-C, and TG should be obtained in the following individuals:

A - Patients with CHD, cerebrovascular or peripheral artery disease. (Heart Protection Study Collaborative Group, 2002) **(Grade A, Level Ib)**

A - Patients with diabetes mellitus (Colhoun et al, 2004) **(Grade A, Level Ib)**

A - Individuals with a family history or clinical evidence of familial hyperlipidaemia. (Civeira, 2004) **(Grade A, Level Ib)**

A - Individuals with other risk factors for CHD (Sever et al., 2003) **(Grade A, Level Ib)**

Goal Lipid Levels

For the prevention of coronary heart disease, the first priority is the optimization of LDL-C level.

Lipid Goal Levels in the Three Risk Group Categories

	High Risk Group	Intermediate Risk Group	Low Risk Group
LDL Cholesterol mmol/L (mg/dL)	<2.6 (100)	<3.4 (130)	<4.1 (160)
Triglyceride mmol/L (mg/dL)	<2.3 (200)	<2.3 (200)	<2.3 (200)
HDL Cholesterol mmol/L (mg/dL)	≥1.0 (40)	≥1.0 (40)	≥1.0 (40)

A - The recommended LDL-C goal level for the **High Risk Group** is <2.6 mmol/L (100 mg/dL) (Heart Protection Study Collaborative Group, 2002; Expert Panel on Detection, Evaluation and Treatment of High Blood Cholesterol in Adults, 2001). **(Grade A, Level Ib)**

C - The recommended LDL-C goal level for the **Intermediate Risk Group** is <3.4 mmol/L (130 mg/dL), with an LDL-C level of <2.6 mmol/L (100 mg/dL) being an option (Sever et al, 2003; Genest et al., 2003; Mosca et al., 2004). **(Grade C, Level IV)**

C - The recommended LDL-C goal level for the **Low Risk Group** is <4.1mmol/L (160 mg/dL), with an LDL-C level of <3.4 mmol/L (130 mg/dL) being an option (Genest et al., 2003; Mosca et al., 2004). **(Grade C, Level IV)**

C - In **very high risk patients** (e.g., patients with established CHD and diabetes mellitus or multiple other risk factors) an "optional goal" of LDL-C <2.1 mmol/L (80 mg/dL) may be considered by the physician, who, however, must balance the benefits against the cost and potential side effects of high doses of medication or combination therapy which are often required to achieve very low LDL-C levels (Grundy et al., 2004). **(Grade C, Level IV)**

GPP - The goal TG level for all three risk groups is <2.3 mmol/L (200 mg/dL). **(GPP)**

C - Individuals with very high levels of TG, e.g., >4.5 mmol/L (400 mg/dL) or especially >10 mmol/L (900 mg/dL), have an increased risk of acute pancreatitis and should be treated for this reason. In these patients, the first priority is to reduce the TG level to prevent acute pancreatitis (Haffner, 2004). **(Grade C, Level IV)**

C - The goal HDL-C level for all three risk groups is greater than or equal to 1.0 mmol/L (40 mg/dL) (National Heart Foundation of Australia & Cardiac Society of Australia and New Zealand, 2001; Mosca et al., 2004). **(Grade C, Level IV)**

Lifestyle Changes

Nutrient	Recommended Intake
Total fat	20 to 30% of total calories
Saturated fat*	<7% of total calories
Polyunsaturated fat*	6 to 10% of total calories
Trans-fatty acid	<1% of total calories
Carbohydrate	50 to 60% of total calories (mainly from complex carbohydrates)
Dietary fibre	20 to 30 g per day
Protein	About 15% of total calories
Cholesterol	<200 mg/day
Food Group	**Recommended Intake**
Fruit and vegetables	2 + 2 servings($\geq$ 400 g) per day
Total calories	Enough to achieve and maintain a body mass index (BMI) of 18.5 to 23 kg/m^2

*Monounsaturated fat: Difference of Total fat minus Saturated and Polyunsaturated fat, i.e. Total fat – (Saturated fat + Polyunsaturated fat)

A -Lifestyle changes are an integral part of overall management. They are the mainstay in population based primary prevention strategies. In addition, it is very important to continue these lifestyle changes in patients who have been started on drug therapy. **(Grade A, Level Ib)**

A - Patients who smoke should be advised to stop smoking immediately (Singapore Ministry of Health, 2002; Doll et al., 2004; De Backer et al., 2003). **(Grade A, Level Ib)**

A - Weight reduction is achieved mainly by dietary therapy and exercise. **(Grade A, Level Ib)**

C - It is recommended that individuals engage in at least 30 minutes of moderate intensity physical activity most days of the week (Pate et al., 1995; World Health Organization (WHO), 2004). For individuals who have difficulty exercising, they should be encouraged to engage in less strenuous physical activity. **(Grade C, Level IV)**

A - The appropriate drug must be chosen for the particular type of dyslipidaemia, e.g., statins for lowering high LDL-C levels ("Randomised trial of cholesterol lowering," 2002; LaRosa et al., 2005) and fibrates for lowering TG levels or for elevating low HDL-C levels (Rubins et al., 1999; "Secondary prevention," 2000). **(Grade A, Level Ib)**

C - The cost of therapy should be considered in the choice of a particular lipid medication (Hass et al., 2005). **(Grade C, Level IV)**

C - Generic formulations cost less than non-generic drugs and can be considered if they meet prescribed standards (Hass et al., 2005; Mihaylorva et al, 2005; "Countering delays," 2002). **(Grade C, Level IV)**

Recommended Drug Therapy in the Different Dyslipidaemias

Dyslipidaemia	Drugs of Choice
Hypercholesterolaemia	Statin with or without Ezetimibe
Mixed Dyslipidaemia	• Statin with or without Fibrate* • Fibrate* with or without Statin
Hypertriglyceridaemia	Fibrate*
Severe Hypertriglyceridaemia	Fibrate* + Omega 3 Fish Oil
Isolated low HDL-C	Fibrate*

*In all individuals in whom a fibrate is recommended, nicotinic acid can also be considered.

Recommended Drugs for Hypercholesterolaemia

A - Hydroxy-methylglutaryl-coenzyme A (HMG-CoA) reductase inhibitors (statins) are the preferred drugs for hypercholesterolaemia ("Randomised trial of cholesterol lowering," 1994; Heart Protection Study Collaborative Group, 2002; LaRosa et al., 2005). **(Grade A, Level Ia)**

Ezetimibe when added to a statin will produce a further 18% lowering of the LDL-C.

C - Check serum transaminases before and 8 to 12 weeks after starting statin therapy. If they are normal, consider repeating this test at least once annually (especially when the dosages of the drugs are increased or when combination therapy is initiated) (Fletcher et al., 2005; Pasternak et al., 2002; Anfossi et al., 2004; Gotto & Pownall, 2003). **(Grade C, Level IV)**

C - Monitoring of serum creatine kinase is also advisable in patients with renal disease, when high dosages of statins are used or when statins are combined with fibrates or nicotinic acid. Patients should be advised to report promptly to their doctors if they have muscle pain, tenderness or weakness (Pasternak et al., 2002; Gotto & Pownall, 2003). **(Grade C, Level IV)**

C - Elevation in the levels of serum transaminases above 3 times the upper limit of the normal range is an indication to stop statins. The drugs can be reintroduced at a lower dose when the liver function has returned to normal (Fletcher et al., 2005). **(Grade C, Level IV)**

C - Elevation of serum creatine kinase greater than 5 to 10 times the upper limit of the normal range, associated with muscle pain, is an indication to stop statins. Patients who are troubled by muscle pain, even in the absence of a raised serum creatine kinase, may benefit from either: (i) stopping the statin therapy or (ii) reducing the dosage (Borja, 2005). **(Grade C, Level IV)**

Recommended Drugs for Hypertriglyceridaemia

In all individuals in whom a fibrate is recommended, nicotinic acid can also be considered.

A - Fibrates are the drugs of choice in the treatment of hypertriglyceridaemia ("Secondary prevention," 2000). **(Grade A, Level Ib)**

A - In severe hypertriglyceridaemia (e.g., TG >10 mmol/L [900 mg/dL]), where fibrates alone may not adequately lower the markedly elevated TG levels, omega 3 fish oils should be added in dosages of 3 to 12 g per day (Harris et al., 1997). **(Grade A, Level Ib)**

Recommended Drugs for Mixed Dyslipidaemia

A - A statin is recommended if the predominant lipid abnormality is an elevated LDL-C. If the TG remains unacceptably high or if the HDL-C remains low despite the statin, consider adding a fibrate (Koh et al., 2005; Grundy et al., 2005). **(Grade A, Level Ib)**

C - A fibrate is recommended if the TG is >4.5 mmol/L (400 mg/dL) (Haffner, 2004). If the LDL-C remains elevated despite the fibrate, consider adding a statin. **(Grade C, Level IV)**

C - The decision to combine a statin and a fibrate must be individualized and should be initiated only when it is strongly indicated (Barter, 1998; Davidson, 2002). **(Grade C, Level IV)**

B - When a fibrate is combined with a statin, fenofibrate is recommended. Gemfibrozil should not be given because it significantly increases the level of most statins and this may increase the risk of complications (Prueksaritanont et al., 2002; Jones & Davidson, 2005). **(Grade B, Level III)**

C - In combination therapy: (i) start the second drug at a low dosage and increase the dose gradually until the goal level is achieved. High dosages of statins should be avoided, (ii) monitor serum transaminases and creatine kinase before and 6 to 8 weeks after initiation of the combination therapy. Thereafter, these 2 tests should be repeated at least once annually or whenever the dosages of the drugs are increased, (iii) patients should be advised to promptly report to their doctors if they have muscle pain, tenderness or weakness, (iv) consider doing serum creatine kinase in patients who complain of muscle pain (Gotto & Pownall, 2003; Knopp, 1999). **(Grade C, Level IV)**

Treatment of Isolated Low HDL-C

A - Based on the results of the recent Veterans Affairs High-Density Lipoprotein Intervention Trial (VA-HIT) Study, CHD patients whose primary lipid abnormality is a low HDL-C despite lifestyle changes can be given a fibrate to elevate the HDL-C level (Rubins et al., 1999). **(Grade A, Level Ib)**

Referral of Patients to Specialist

GPP - Patients who remain outside the target values despite dietary changes and maximal drug therapy should be referred to lipid specialists.**GPP**

Special Considerations

Children, Women, Pregnancy, Elderly

A - Statins can be used in children, but proper monitoring is required. **(Grade A, Level Ib)**

C - Resins can be added on to statin therapy in children if LDL-C targets are not achieved. **(Grade C, Level IV)**

A - In postmenopausal women as well as premenopausal women, the decision to start drug therapy should be based on the 10-Year CHD Risk Score (Cheung et al., 2004; LaRosa, He, & Vupputuri, 1999). **(Grade A, Level Ib)**

GPP - During pregnancy, treatment is indicated only in patients with severe hypertriglyceridaemia (e.g., TG >10 mmol/L [900 mg/dL]). The only drug recommended is omega 3 fish oils after intensive dietary therapy. **GPP**

C - Statins are contraindicated in women who are pregnant or who are likely to be pregnant **Grade C, Level IV**

A - In the elderly, the decision to start drug therapy should be based on the 10-Year CHD Risk Score, the life expectancy, as well as the quality of life of the patient. Age is not a contraindication to drug therapy if indicated (Shepherd et al., 2002). **Grade A, Level Ib**

Renal Disease

GPP - The starting dose of statins in chronic renal failure should be low. During therapy, serum creatine kinase and renal function should both be carefully monitored. **GPP**

GPP - Fibrates can be used if the renal failure is only mild or moderate but the dosages should be reduced, with appropriate monitoring for side effects, especially myopathy. When creatinine clearance is less than 10 mL/min, fibrates are contraindicated. **GPP**

Liver Disease

C - Screen liver function (especially transaminases) on 2 consecutive occasions in patients with chronic liver disease due to either hepatitis B or alcoholic abuse. If the level of either of these 2 transaminases is elevated but <1.5 times the upper limit of the normal range, statins can be given. If the level is $\geq$1.5 times but <3 times the upper limit of the normal range, statins can still be given but with caution. In both situations, the starting dose of the statins should be low. Statins are contraindicated in those with acute liver disease and also in those with advanced or end stage parenchymal liver disease (Anfossi et al., 2004). **Grade C, Level IV**

GPP - Fibrates can be given in patients whose transaminase levels are elevated <3 times the upper limit of the normal range, but again at a lower starting dosage. Careful monitoring of the serum transaminases and creatine kinase after commencement of either stain or fibrate therapy is recommended. **GPP**

Definitions:

Levels of Evidence

Level Ia: Evidence obtained from meta-analysis of randomised controlled trials

Level Ib: Evidence obtained from at least one randomised controlled trial

Level IIa: Evidence obtained from at least one well-designed controlled study without randomisation

Level IIb: Evidence obtained from at least one other type of well-designed quasi-experimental study

Level III: Evidence obtained from well-designed non-experimental descriptive studies, such as comparative studies, correlation studies and case studies

Level IV: Evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities

Grades of Recommendations

Grade A (evidence levels Ia, Ib): Requires at least one randomised controlled trial as part of the body of literature of overall good quality and consistency addressing the specific recommendation.

Grade B (evidence levels IIa, IIb, III): Requires availability of well conducted clinical studies but no randomised clinical trials on the topic of recommendation.

Grade C (evidence level IV): Requires evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities. Indicates absence of directly applicable clinical studies of good quality.

Grade GPP (good practice points): Recommended best practice based on the clinical experience of the guideline development group.

CLINICAL ALGORITHM(S)

An algorithm is provided in the original guideline document for risk stratification of patients.

EVIDENCE SUPPORTING THE RECOMMENDATIONS

REFERENCES SUPPORTING THE RECOMMENDATIONS

References open in a new window

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations" field).

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

- Primary and secondary prevention of coronary heart disease
- Reduction of cerebrovascular events
- Reduction of low-density lipoprotein cholesterol and triglyceride levels
- Increased high-density lipoprotein cholesterol levels
- Decreased morbidity and mortality due to coronary heart disease

POTENTIAL HARMS

- Myopathy, rhabdomyolysis, elevated liver transaminases (impaired liver function), and elevated serum creatine kinase with statins
- Gallstones, myopathy, and elevation of liver enzymes (transaminases) with fibrates
- Flushing with nicotinic acid

CONTRAINDICATIONS

CONTRAINDICATIONS

- Fibrates are contraindicated when the creatinine clearance is <10 mL/min.
- Statins are contraindicated in those with acute liver disease and also in those with advanced or end stage parenchymal liver disease.
- Statins are also contraindicated in women who are pregnant or who are likely to be pregnant.
- Gemfibrozil in contraindicated in patients taking statins.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- These guidelines are not intended to serve as a standard of medical care. Standards of medical care are determined on the basis of all clinical data available for an individual case and are subject to change as scientific knowledge advances and patterns of care evolve.
- The contents of the original guideline document are guidelines to clinical practice, based on the best available evidence at the time of development. Adherence to these guidelines may not ensure a successful outcome in every case, nor should they be construed as including all proper methods of care or excluding other acceptable methods of care. Each physician is ultimately responsible for the management of his/her unique patient in the light of the

clinical data presented by the patient and the diagnostic and treatment options available.
- Evidence-based clinical practice guidelines are only as current as the evidence that supports them. Users must keep in mind that new evidence could supersede recommendations in these guidelines.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

Quality Indicators for Lipids Management

The goal low density lipoprotein cholesterol (LDL-C) levels are:

A - High Risk Group: LDL-C <2.6 mmol/L (100 mg/dL) **(Grade A, Level Ib)**

C - Intermediate Risk Group: LDL-C <3.4 mmol/L (130 mg/dL) **(Grade C, Level IV)**

C - Low Risk Group: LDL-C <4.1 mmol/L (160 mg/dL) **(Grade C, Level IV)**

Process Indicators and Recommended Frequency

Performance Parameter	Recommended Review Frequency
All patients who are on lipid modifying drug therapy	Lipids at least every 6-12 months
Patients who are not on lipid modifying drug therapy (goal LDL cholesterol levels as stated above achieved):	
(1) High Risk Group (2) Intermediate Risk Group (3) Low Risk Group	Lipids every 1 year Lipids every 2 years Lipids every 3 years
Patient education	At diagnosis and regular intervals according to risk level

It should be emphasized that the ultimate objective of treatment of dyslipidaemia is not to lower cholesterol per se but to reduce overall morbidity and mortality risk, which is also influenced by other concomitant risk factors.

In the management of an individual patient, good clinical judgement should be exercised in every situation.

IMPLEMENTATION TOOLS

Audit Criteria/Indicators
Clinical Algorithm

Personal Digital Assistant (PDA) Downloads
Quick Reference Guides/Physician Guides
Staff Training/Competency Material

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Living with Illness
Staying Healthy

IOM DOMAIN

Effectiveness
Patient-centeredness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Singapore Ministry of Health. Lipids. Singapore: Singapore Ministry of Health; 2006 May. 59 p. [92 references]

ADAPTATION

These guidelines provide recommendations that were adapted from other international guidelines on lipids and modified to suit the local situation. International guidelines used as references include the 2001 U.S. National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel [ATP] III) (Bethesda [MD]: U.S. Department of Health and Human Services, Public Health Service, National Institutes of Health, National Heart, Lung and Blood Institute; 2001; the 1998 European Prevention of Coronary Heart Disease in Clinical Practice which was adapted from the previous recommendations of the Second Joint Task Force of European and other Societies on Coronary Prevention (Wood DA, De Backer G, Faegerman O, et al. Prevention of coronary heart disease in clinical practice. Recommendations of the Second Joint Task Force of the European Society for Cardiology, European Atherosclerosis Society and European Society of Hypertension. Eur Heart J 1998;19:1434-1503) and the 1998 joint British recommendations (Joint British recommendations on prevention of coronary heart disease in clinical practice. British Cardiac Society, British Hyperlipidaemia Association, British Hypertension Society, British Diabetic Association. Heart 1998;80[Suppl 2]:S1-S29).

DATE RELEASED

2001 Jul (revised 2006 May)

GUIDELINE DEVELOPER(S)

National Committee on Cardiac Care (Singapore) - National Government Agency [Non-U.S.]
National Medical Research Council (Singapore Ministry of Health) - National Government Agency [Non-U.S.]
Singapore Cardiac Society - Medical Specialty Society
Singapore Ministry of Health - National Government Agency [Non-U.S.]

GUIDELINE DEVELOPER COMMENT

These guidelines were developed by an expert workgroup appointed by the Joint Cardiovascular Working Committee of the Singapore Cardiac Society and the Singapore National Committee on Cardiac Care.

SOURCE(S) OF FUNDING

Singapore Ministry of Health

GUIDELINE COMMITTEE

Workgroup on Lipids

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Singapore Ministry of Health. Lipids. Singapore: Singapore Ministry of Health; 2001 Jul. 52 p.

GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the Singapore Ministry of Health Web site.

Print copies: Available from the Singapore Ministry of Health, College of Medicine Building, Mezzanine Floor 16 College Rd, Singapore 169854.

AVAILABILITY OF COMPANION DOCUMENTS

The following are available:

- Audit criteria and a continuing medical education (CME) self assessment are available in the original guideline document.
- The full text guideline and summary card are available for PDA download in ISilo and MSReader formats from the Singapore Ministry of Health Web site.

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI on April 16, 2002. The information was verified by the guideline developer as of April 19, 2002. This NGC summary was updated on August 14, 2006.

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